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Claims:

1. A stent comprising a plurality of unit cells, each unit cell comprising a first segment having proximal and distal ends and a substantially sinusoidal shape, and a second segment having proximal and distal ends, the proximal end of the first segment coupled to the proximal end of the second segment, the distal end of the first segment coupled to the distal end of the second segment, the second segment being more flexible than the first segment, wherein the unit cell has a stable contracted state in which the second segment substantially conforms to the sinusoidal shape of the first segment, and a deployed state in which the second segment has a convex shape bowed away from the first segment.

2. The stent of claim 1 wherein the second segment of each unit cell is coupled to the first segment so that the first segment inhibits deformation of the second segment in the contracted state.

3. The stent of claim 1 or 2 wherein the second segment of each unit cell is stable only in the contracted and deployed states.

4. The stent of claim 1, 2 or 3 wherein the first segment of each unit cell is substantially rigid.

5. The stent of claim 1, 2, 3 or 4 wherein the first segment of each unit cell comprises a larger cross-sectional area than the second segment.

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6. The stent of claim 1, 2, 3, 4 or 5 wherein the first and second segments of each unit cell are manufactured using different materials.

7. The stent of any one of claims 1 to 6 wherein the proximal and distal ends of the first and second segments of each unit cell are coupled together by hinges.

8. The stent of claim 7 wherein the hinges of each unit cell are elastic hinges.

9. The stent of claim 7 wherein the hinges of each unit cell are plastic hinges.

10. The stent of any one of claims 1 to 9 wherein the unit cells are transformed from the contracted state to the deployed state by application of a uniform radially outwardly directed force to an interior surface of the stent.

11. The stent of any one of claims 1 to 10 where a first subset of the plurality of unit cells has a second segment with a first cross-sectional area and a second subset of the plurality of unit cells has a second segment with a second cross-sectional area.

12. The stent of any one of claims 1 to 11 wherein the plurality of unit cells are arranged in a longitudinally arranged series of circumferential rings.

13. The stent of any one of claims 1 to 12

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wherein the stent is capable of attaining different outer diameters depending on the amount and location of unit cells that are transformed to the deployed state.

14. The stent of any one of claims 1 to 13 wherein the unit cells are designed and arranged to provide a range of diameters for the stent in a stepwise fashion.

15. The stent of claim 14 wherein the stent has an initial diameter at a first end, a final diameter at a second end, and at least one intermediate diameter between the first and second ends, the intermediate diameter differing from the initial and final diameters.

16. The stent of claim 15 wherein the initial and final diameters are the same.

17. The stent of any one of claims 12 to 16 wherein within a circumferential ring, a first subset of unit cells has a different force-displacement characteristic than a second subset of the plurality of unit cells.

18. The stent of any one of claims 1 to 17 wherein the second segment of each unit cell is coupled to the second segment of an adjacent cell.

19. The stent of claim 18 wherein the second segment of each unit cell is coupled to the second segment of an adjacent cell by a joint disposed near a midpoint of the second segments.

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20. The stent of any one of claims 1 to 19 wherein the stent is made from a polymer, a metal, a composite, a shape memory material with superelastic behavior, a shape memory material with temperature sensitive behavior, or a combination of two or more of these materials.

21. A method for deploying a stent having two substantially stable states, the method comprising:

providing a stent comprising a plurality of unit cells in a contracted state, wherein each unit cell comprises a first segment having proximal and distal ends and a substantially sinusoidal shape, and a second segment having a proximal end that is coupled to the proximal end of the first segment and a distal end that is coupled to the distal end of the first segment, the second segment being more flexible than the first segment, wherein the second segment substantially conforms to the sinusoidal shape of the first segment in the contracted state; and

deploying at least one of the unit cells of the stent by causing the second segment of the unit cell to deploy to a convex shape bowed away from the first segment of the unit cell.

22. The method of claim 21 wherein the stent is provided in the contracted state by compressing the stent onto a balloon of a balloon catheter.

23. The method of claim 22 wherein at least one unit cell is deployed by applying a radially outward

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force by inflating the balloon.

24. The method of claim 21, 22 or 23 wherein unit cells of the stent are deployed in a stepwise fashion.

25. The method of claim 21, 22, 23 or 24 wherein the number of unit cells that are deployed is proportionate to a radially outward force that is applied to the stent.

26. The method of any one of claims 21 to 25 wherein unit cells are selectively deployed by providing second segments having varying diameters.

27. The method of any one of claims 21 to 26 wherein the diameter of the stent in a deployed state is varied by varying lengths of first and second segments of a unit cell.

28. The method of any one of claims 21 to 27 wherein the diameter of the stent in a deployed state is varied by varying the number of unit cells that are provided in the contracted state.